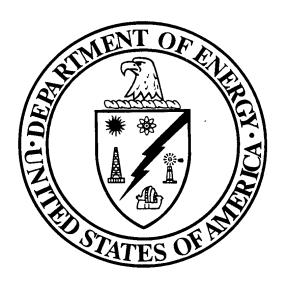
U.S. Department of Energy

Needs Assessment and Training Plan Guide



Washington, D.C. 20585

September 28, 1999

Foreword

On November 20, 1998, the Secretary of Energy announced the Workforce for a 21st Century Initiative that focuses on rebuilding a highly qualified and diverse workforce in support of current and future Departmental missions. Effective development of employees is one approach to successfully moving the Department forward in achieving those missions.

Secretary Richardson has emphasized the critical role of training and development. The Secretary's March 4, 1999 memorandum on Effectively Managing Training Resources, further directed Heads of Departmental Elements to prepare training plans and individual employee development plans to focus training on mission goals, performance objectives and workforce capabilities. DOE Order 360.1A, Federal Employee Training requires that each DOE element must annually identify its critical training needs as part of program analyses and budget reviews.

According to the 1999 GAO Report, DOE must address the following issues:

- First, serious concerns have been expressed in the past that the billions of dollars spent on civilian training are not targeted wisely and do not lead to improved performance.
- ♦ Second, with downsizing and restrictions on hiring, new skills will have to be acquired by training as opposed to recruiting.
- Finally, with dwindling resources, limited training dollars are not likely to be increased in the near future.

This guide was developed to assist in conducting needs assessments and developing an organizational training plan. Utilizing a consistent framework with built-in flexibility for site issues and initiatives, the Department can track, measure, and more effectively use training resources. Element training plans ensure that the Department develops and maintains a competent, skilled workforce, promotes effective coordination of training, and encourages partnership initiatives, to meet mission responsibilities.

Special Acknowledgment

The Office of Training and Human Resource Development, Office of Management and Administration, would like to thank and acknowledge

Charlotte Thomen, Albuquerque Operations Office Joni Boone, Office of Environmental Management Doris Hixon, Savannah River Deborah Manning, Nevada Operations Office Robin Mudd, Office of Training and Human Resource Development

for all of their hard work and dedication in developing the DOE Needs Assessment and Training Plan Guide.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
SECTION I: NEEDS ASSESSMENT	2
Overview	2
Requirements	2
Terminology	
Related Guidance	
Process	4
(1) Prepare a Plan	
Scope	
Individual Needs Assessment	
Occupational Needs Assessment	
Organizational Needs Assessment	
Customer Satisfaction	
Process for Conducting the Assessment	
Level of Rigor or Formality	
Tools and Techniques	
Data Collection Questions	
Schedule	
Roles and Responsibilities	
Evaluation Strategy	
(2) Conduct the Assessment	
(3) Analyze the Results	
Related Uses for the Assessment Data	
(4) Integration into the Training Plan	
SECTION II: TRAINING PLAN	1.4
SECTION II. TRAINING FLAN	14
Overview	14
Description of a Training Plan	14
Requirements	
Required Components of a Training Plan	
Relationship with Training Priorities	
Descriptions	
Example Annual Training Plan	
(1) Critical Needs	
Description	
Source of Data	
	-

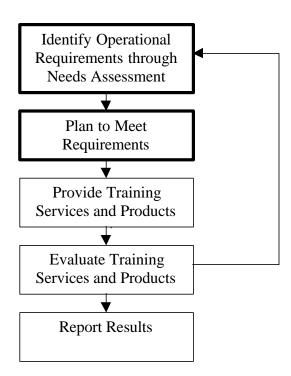
(Continued)

Examples	17
Recommended enhancement	17
(2-3) Training Goals, Objectives, Outcomes, and Performance Measures	17
Integrated Measures	17
Terminology and Examples	18
Key Characteristics	19
Guidelines	20
Best Practices	21
(4) Federal Training Staff and Estimated Training Staff Travel Funds	22
4.1 Federal Training Staff	22
4.2 Estimated Training Staff Travel Funds	22
(5) Training Budget	
Multi-year programs	
(6) Major Training Delivery Programs, Projects, and Other Significant Activity	ties
Examples	22
Recommended Enhancement	23
(7) Schedules	23
Recommendation	23
(8) Mandatory Training	23
8.1 Compliance Training	
8.2 Directed Training	24
Recommended Enhancement	24
(9) Manager, Supervisor, and Team Leader Training	24
9.1 Training in Leadership Competencies	
9.2 Work Assignments	25
(10) DOE-Wide or Multi-Element Training	
Examples	
(11) Developmental Training	26
(12) Planned Reports	26
Annual Training Summary Report	26
Human Resource Management Accountability Program (HRMAP)	27
Federal Equal Opportunity Recruitment (FEORP) and Disabled	
Veterans Affirmative Action Program (DVAAP) Plan Certification	
and Accomplishment Report	27
(13) References	27
APPENDICES	28
A – Needs Assessment Plan Outline	28
B – Related Uses for the Assessment Data	
C – Example Training Plan	
D – References	40

Introduction

This purpose of this document is to provide guidance for two key steps in the process for providing quality training products and services that is consistent with DOE O 360.1A, *Federal Employee Training*, and DOE M 360.1A, *Federal Employee Training Manual*.

Process for Providing Quality Training Products and Services This flowchart outlines the major steps for providing quality training products and services. This focus for this guidance is the first two steps.



Overview of Section 1: Needs Assessment

This section includes the guidance for conducting a needs assessment, as required by DOE O 360.1A and DOE M 360.1A-1.

Background information is provided as well as guidance for each step of the needs assessment process.

Needs assessment is an evaluation of the organization's training needs, based on critical drivers, strategic and organizational goals, workforce performance, and operating policies and procedures. The training needs assessment provides the foundation for developing an organizational training plan.

The needs assessment also provides a clear reason for making and documenting effective decisions for the allocation of training resources. The data builds the foundation for analyzing, designing, developing, implementing, and evaluating training. It also helps assure training is the appropriate solution and identifies training issues.

Requirements

The requirements for needs assessment as listed in DOE M 360.1A, include:

- a. DOE element needs assessment. Each DOE element must identify annually its critical needs (defined as those immediate training and development needs which, when met, will be effective in improving organizational and workforce performance) based on the results of organizational workforce needs assessments and annual review and revision of individual development plans.
- b. <u>DOE needs assessment</u>. The Office of Training and Human Resource Management must ensure that sufficient organizational, functional, or occupational training needs assessments are completed to determine key program and DOE workforce training needs. In a five year cycle, these assessments must include, but are not limited to, scientific and technical, acquisition, project management, and financial management functions.

Requirements (continued)

c. <u>Individual development plans</u>.

- (1) The immediate supervisor must annually discuss training needs with each employee in regard to job requirements, including technical qualification standards, and the competencies needed to meet those requirements. Immediate supervisors must have this discussion with new and reassigned employees within 60 days of the person joining DOE or being reassigned.
- (2) Based on this discussion, each employee must have the opportunity to complete an individual development plan which must be reviewed and revised annually. Supervisors must ensure that all employees for whom, because of their position, expertise, career status, or performance level, individual development planning would result in little or no benefit to DOE.
- (3) The individual development plan signed by the supervisor and employee does not approve and/or authorize any training contained in the plan; all training must be approved and authorized in accordance with the training policies and procedures of the DOE element.

Terminology

There are many definitions for the term "needs assessment". This reflects that the same term is used for a variety of related activities with different outcomes.

The common outcome for a needs assessment is simply to identify what is needed.

It becomes more complicated when applied to the variety of activities it may serve, including:

- To identify the products and services a training organization must provide.
- To identify job requirements.
- To identify the task requirements within a job.
- To identify the performance problems and the related solution (training or non-training).
- To identify the requirements for a specific program, project, activity, or training course.

Terminology (continued)

To add to the confusion, the specific tools and techniques required to implement the related activities will also vary and the term "needs assessment" is used interchangeably with "needs analysis".

For this guidance, the term "needs assessment" will refer to the process of identifying what products and services a training organization must provide based on the identified operational requirements (individual needs for development, customer expectations, regulatory requirements, DOE initiatives, etc.).

Related Guidance

Guidance related to Individual Development Plans includes:

- Headquarters Individual Development Planning Guide
- Field Individual Development Planning Guide

Guidance that includes needs assessments for related activities includes:

- DOE-HDBK-1074-95, Alternative Systematic Approaches to Training
- DOE-HDBK-1103-96, Table-Top Needs Analysis
- DOE-STD-1077-94, *Training Accreditation Program Standard:* Requirements and Guidelines
- DOE-HDBK-1078-94, Training Program handbook: A Systematic Approach to Training
- Succession Planning Handbook, June 21, 1999 http://www.hr.doe.gov/pers/splan/success.html

Process

The process for identifying what products and services a training organization must provide includes these steps:

- (1) Prepare a plan
- (2) Conduct the assessment
- (3) Analyze the results
- (4) Integration into the Training Plan

(1) Prepare a Plan

The first step in conducting a needs assessment is to prepare a plan. This plan should include:

- Scope (What needs do you expect to identify?)
- Process for conducting the assessment
- Schedule
- Roles and responsibilities
- Evaluation strategy (How will you know the assessment fulfilled its purpose?)

NOTE: These plan components may not be required for all needs assessments depending on the scope, expected outcome of the planned assessment, and resources.

In developing a plan, it is important to consider the following:

- Establish ownership of conducting the assessment and developing recommended solutions.
- Discuss who will be affected by the needs assessment process: employees, organizations, special working groups, and engage pertinent parties.
- Review the training organization's capabilities, roles, and resources.

An example Needs Assessment Plan outline is Appendix A.

Scope

Identification of the operational requirements (individual needs for development, customer expectations, regulatory requirements, DOE initiatives, etc.) that are the drivers for the products and services a training organization should provide may include several levels of assessment, including:

- Individual
- Occupational
- Organizational
- Customer satisfaction

The assessment tools and techniques for each of these levels may vary, as discussed below.

NOTE: It is not a requirement to conduct all levels of assessment. Each training organization must determine the relevant scope of assessments to be conducted.

Individual Needs Assessment

The target of individual needs assessment is the *worker*. This level focuses on the specific knowledge, skills, abilities, and behaviors of each employee. The DOE *Headquarters/Field Individual Development Plan Guide, May 1999*, specifies that assessment of skills is a process to identify the competencies employees must possess in order to achieve organizational priorities.

In DOE, the individual needs assessment is conducted through the individual development planning process. The individual development plans must be reviewed and revised annually.

The employee and the supervisor develop an Individual Development Plan (IDP) that will enhance the employee's capability in her/his position to meet mission goals through training, education, and developmental activities. This process is emphasized in both the DOE Secretary of Energy memorandum, "Effectively Managing Training Resources," dated March 4, 1999 and DOE Order 360.1, "Training," dated 5-31-95.

On-going discussions between the employee and the supervisor are imperative for maintaining an up-to-date focus on current and changing mission goals.

There are five steps identified in the DOE *Headquarters/ Field Individual Development Plan Guide, May 1999*, which will assist with the identification and analysis of current and planned duties to determine appropriate and effective activities for IDP development.

- Identify performance priorities
- Determine skills needs assessment/developmental objectives
- Explore developmental options and select activities
- Hold Development discussion with supervisor
- Take action

The developmental activities documented in the individual development plans should be compiled and integrated into Step 3 of the needs assessment process, Analyzing the Results.

Occupational Needs Assessment

The target for occupational/functional needs assessment is the *work* of the organization. This level focuses on identifying mission-critical occupational groups and work functions that are essential to accomplishing the organization's mission.

There are two typical levels of occupational needs assessment:

- (1) The functional or occupational assessment required to be completed by the Office of Training and Human Resource Management. These assessments are typically for DOE-wide functions or occupations, such as Facility Representatives and Technical Qualification Program areas. These occupations or functions may require qualification standards.
- (2) Site-specific assessments. These assessments are completed to identify the site-specific components to the DOE-wide assessments or for additional occupations.

Occupational assessments are typically conducted for critical occupations or functions (as identified by nuclear defense facilities in 1998).

Organizational Needs Assessment

The target of an organizational assessment is the *workplace*. At this level, developmental priorities are identified that are critical to the organization as a whole. This assessment usually occurs at a high level in the organizational where organizational direction and policies are established.

Organizational assessments consider strategic issues, goals, and objectives that may result in the need for training, such as:

- Maintaining operational readiness
- Maintaining technical capability
- Ensuring compliance
- Containing cost and ensuring efficiency
- Building a talented and diverse workforce (Strategic Plan for Achieving and Promoting a Workforce that looks like America)
- Maintaining quality and customer focus
- Reducing turnover and absenteeism

Organizational Needs Assessment (continued)

- Increasing employee job satisfaction
- Integrating technology improvements
- Managing change and innovation
- Incorporating information obtained through operational experience, or business practice analysis
- Developing competencies required for outlying years
- Training critical to the organization as a whole
- Recent audit findings related to training
- Missions and functions that have led to critical staffing needs and skill requirements, and
- Workforce changes creating skill imbalances, gaps and shortages

There is a direct relationship between organizational and occupational needs. Organizations identify the functions required to achieve mission assignments that will then be linked to occupational job series (such as nuclear engineering, fire protection specialist, budget analyst, accountant, contracts specialist). As organizational needs are identified, the approach to meeting those needs may impact occupational requirements, with a resulting training need.

Customer satisfaction

An assessment of customer satisfaction may also be conducted to identify if the products and services provided by the training organization meet their customers' expectations.

Process for conducting the assessment

Once the scope of the assessment has been identified, the process for conducting the assessment should be outlined in the plan, including:

- Level of rigor or formality
- Tools and techniques

Level of rigor or formality

There is a range of levels of rigor or formality in conducting needs assessments, ranging from:

- Very informal, with little documentation other than a brief description of techniques and participants, to
- Very formal, with every step, input, and decision documented.

Level of rigor or formality (continued)

As discussed in DOE-HDBK-1074-95, *Alternative Systematic Approaches to Training*, the decision for level of rigor should be based factors such as:

- Relative importance to safety
- Life cycle of the facility
- Programmatic mission
- Characteristics of the facility (complexity)
- Magnitude of the hazards involved
- Management considerations:
 - Resources
 - Immediacy of the need for the training
 - Anticipated impact of the training and how many people it will affect

Tools and techniques

In addition to identifying the appropriate level of rigor or formality, the tools and techniques to use to conduct the assessment must be identified and included in the plan.

As mentioned above, the individual needs assessment is typically conducted through the individual development planning process.

Each training organization should determine the most effective tools and techniques for their site. A combination of tools and techniques may be used. Factors for this decision include:

- Logistics for the data collection, compilation, and analysis
- Resources (time, staff, and funding)
- Current the corporate and site organizational drivers and initiatives
- Organizational culture

Commonly used tools include:

- <u>Surveys</u> A comprehensive survey to help determine the training needs of the organization. Surveys can be paper or electronic.
- <u>Individual interviews</u> Meetings (formal or informal) are held with individuals.
- <u>Focus groups</u> This method includes a discussion with a group of individuals, including:

Tools and techniques (continued)

- Subject matter experts (job incumbents, supervisors, and other experts)
- Stakeholders

Techniques for data collection usually include:

- Review existing documentation (DOE directives, reports, organizational documentation, etc.)
- Facilitated discussion using open-ended questions or lines of inquiry
- Directed data collection using closed-ended questions

Data Collection Questions

Typical questions asked during an <u>occupational</u> needs assessment include the following:

- What knowledge skills and abilities are critical to superior performance in your function?
- Identify training needs that, if met, will enable employees in this occupation to meet their goals better.
- Beyond training, what else can be done to help you and other employees develop and use needed skills?
- What are the barriers in getting your job done?
- What do you see as the primary opportunities for your occupation over the next few years?

Typical questions asked during an <u>organizational</u> needs assessment include the following:

- What are the key goals, objectives, and targets for your department or group for the next year?
- What are the expected challenges for accomplishing these goals?
- Identify training needs that, if met, will enable employees in your organizations to meet their goals better
- What key changes occurring in the business will have greatest impact on the next few years?
- What do you see as the primary opportunities for your organization over the next few years?

Typical questions asked during a <u>customer satisfaction</u> assessment include:

- Did the products and services provided meet your needs?
- How often to you use each product or service?
- How can they be improved?
- What additional products and services would be beneficial?

Schedule

The timeline, milestones, and deliverables for the needs assessment should also be included in the plan.

Key elements which may prompt a needs assessment beyond the annual cycle include:

- external/internal factors that impact the availability of needed skills within an organization
- Change in mission
- New strategic direction
- Introduction of new technologies
- Workload factors that require needs assessments to be planned and executed

Roles and responsibilities

Roles and responsibilities should be identified in the needs assessment plan, especially for key steps, such as:

- Defining the general standards for how the process will be carried out.
- Data-gathering.
- Identifying the participants.
- Include key players (especially the line organizations in the actual data gathering. The more involved they are, the better they will understand the process.
- Communicating the steps for conducting the needs assessment to managers, supervisors and employees to guide them through the process.

If the needs analysis is to be complete, it requires input from both male and female employees of diverse ethnic origins.

Evaluation strategy

The last component of the plan should be to identify how the training organization will determine if the assessment fulfilled its purpose.

Typically, an evaluation component is designed into the tool used for collecting the data. For example, a question is added into a survey or line of inquiry for discussions.

(2) Conduct the assessment

This step of the needs assessment process consists of implementing the plan described above. Some helpful hints include:

- When conducting the needs assessment, adjust to a role of "contributing solutions to business needs" (consulting). This is an opportunity for training representative to reflect their role and participation in the teaming required to accomplish to organization's mission.
- Know your customer's business mission, goals, and place in the company.
- In all phases of the needs assessment process, it is essential to work with members of line management who have a mission interest in training. Line management serves as the subject matter expert (SME) throughout the needs assessment process.

(3) Analyze the results

Once data has been collected, analysis of the results may begin. The data should be analyzed to:

- Highlight key issues
- Identify trends
- Ensure that all the needs are learning needs
- Ensure that training is an appropriate solution to identified problems
- Ensure that training contributes to the overall organizational performance
- Recommend priorities.

The outcome of the analysis should be prioritized requirements, including critical training needs.

Factors to consider in the prioritization process include:

- Include key players and stakeholders in the process to ensure that critical needs are identified and necessary resources are available.
- Be objective in the presentation of the information. The organization's contributions to the needs assessment process gives them some ownership in the outcome and their support is essential to implement recommendations
- Include the method used to analyze raw data.

(3) Analyze the results (continued)

- Identify trends or issues.
- Determine action steps, e.g. what training is needed to achieve business objectives?

The following priorities are used throughout the Department:

- Level 1: Mandated Training. Training required by Federal, State, or Local Law. Example: OSHA, EEO, Continuing Legal Education (OCC), etc.
- Level 2: Directed Training. Training required by DOE
 Directive or other Government regulations or requirements.
 Example: Training required to meet Technical Qualification
 Program, Acquisition Career Development Program;
 Safeguards and Security; Safety, etc., requirements.
- Level 3: Training Required by Position. Training driven by position, organization, or mission-specific requirements. Example: Training specific to the position or training specific to meeting organizational/mission needs/requirements.
- Level 4: Training for Personal Growth. Training required for personal growth and professional development. Example: Training which will promote, enhance and or develop an employee's career, personal and professional growth, consistent with organizational training needs and priorities, including crosstraining for future organizational needs.

Related Uses for the Assessment Data

There are numerous uses for assessment data beyond identifying the products and services a training organization must provide based on the identified operational requirements (individual needs for development, customer expectations, regulatory requirements, DOE initiatives, etc.).

These related uses are listed in Appendix B.

(4) Integration into the Training Plan

Once the training priorities are identified, they can be incorporated into the training plan, which is discussed in the next section.

Overview of Section 2: Training Plan

This section includes the guidance for developing a Training Plan, as required by DOE O 360.1A and DOE M 360.1A-1.

Background information is provided as well as guidance for developing each required component of the plan.

Description of a Training Plan

A training plan is the cornerstone of the training management process. It defines objectives, sets priorities, plans resource allocation, ensures that training funds are appropriately spent, and evaluates the effectiveness of the training programs. It is a "blueprint" for how the office will set program direction for training activities and manage training resources for a one to five year period.

Each DOE Headquarters and Field Organization training organization should manage and plan the training program based on the strategic goals of the organization. By developing and implementing a training plan, each DOE Office can assure a competent and skilled workforce, accurate training budget forecasting, and analyses and projections for current and future training needs.

Requirements

According to DOE O 360.1A, each DOE element must:

- Have a training policy and procedures describing element requirements and responsibilities consistent with the Order.
- Have a training plan.
- Submit annual training summary reports.
- Identify critical training needs annually, through organizational analysis and annual review and revision of individual development plans.

A DOE element that provides DOE-wide or multi-element training must have a separate component of its training plan and annual training summary report that specifically describes the multi-element training programs.

Required Components of a Training Plan

DOE M 360.1A-1 states that DOE element training plans must include the following:

- (1) Critical element needs or those immediate training needs which, when met, will be effective in improving organizational and workforce performance. These needs are typically required at the organizational level and are mission critical.
- (2) Training goals and measures.
- (3) Training outcome and performance measures.
- (4) Training budget, including future resource estimates for multiyear programs.
- (5) Major training delivery programs, projects, and other significant activities.
- (6) Schedules for review and revision of individual development plans, conduct of needs assessment(s), completion of annual training summary report, and initiation of review of training plans.
- (7) Mandatory training.
- (8) Manager, supervisor, and team leader training.
- (9) Each DOE element that provides DOE-wide or multi-element training must have a separate component of its training plan for that multi-element training program.

Relationship with Training Priorities

The relationship with the four commonly used training priorities, as discussed in the previous section on needs assessment process, is as follows:

- Level 1: Training required by Federal, State, or Local Law. This training would be listed with component (8.1) Compliance Training.
- Level 2: Training required by DOE Directive or other Government regulations or requirements. This training will usually be listed either with component (8.1) Compliance Training.
- Level 3: Training driven by position, organization, or mission-specific requirements. This training could be listed with component (1) Critical Training or (9) Manager, Supervisor, and Team Leader Training. If it does not fit into either of those components, the intent to provide such training should be reflected in component (2-3) Goals, Objectives, Performance Measures, and Outcomes.

Relationship with Training Priorities (continued)

• Level 4: Training required for personal growth and professional development. This training could be listed with component (1) Critical Training or (9) Manager, Supervisor, and Team Leader Training. If it does not fit into either of those components, the intent to provide such training should be reflected in component (2-3) Goals, Objectives, Performance Measures, and Outcomes.

Descriptions

Descriptions of each component as well as examples are provided in the following pages of this guidance.

NOTE: Training planned by an organization may fit into more than one of these categories. Each training organization should use its discretion, based on its operational needs, to either list the planned training into the category it best fits or to duplicate the listing.

Example Annual Training Plan

Appendix C is an example Training Plan. This plan is a representative example and was based on existing data from a variety of sources.

(1) Critical Needs

DOE M 360.1A-1 specifies that each DOE element must identify its critical training needs annually through organizational analyses and annual review and revision of individual development plans.

Description

Critical element needs or those immediate training needs which, when met, will be effective in improving organizational and workforce performance. These needs are typically required at the organizational level and are mission critical. The need for training is typically for implementation of new programs or projects or organizational changes in priorities.

Source of data

The critical needs are an outcome of an organizational needs assessment. The critical training needs should be identified through the management validation process, which balances the wants of individuals and priority needs of the organization with available resources.

Examples

Examples of critical needs include:

- A course in Nuclear Criticality is needed because a significant number of individuals require it for Technical Qualification Program deadlines this year.
- Courses in contracting (Contracting Acquisition and Performance Based Contracting) are required because of the change in types of contractor contracts.

Recommended enhancement

The critical needs should be listed as well as the training planned to meet the identified needs.

(2-3) Training Goals, Objectives, Outcomes, and Performance Measures

Two components from the Order are combined in this section to integrate the goals, objectives, performance measures and outcomes.

Under the Government Performance and Results Act (GPRA), agencies are to set strategic and annual goals, measure performance, and report on the degree to which goals are met.

An organization's goals, objectives, performance measures, and outcomes should be a result from the strategic planning process.

The training organization's goals and objectives should be defined prior to conducting the assessment of individual's training needs to facilitate linkage with organizational priorities and DOE initiatives.

Integrated Measures

As stated in the TRADE Performance-Based Management Handbook:

Performance measurement systems succeed when the organization's strategy and performance measures are in alignment and when senior managers convey the organization's mission, vision, values, and strategic direction to employees and external stakeholders. The performance measures give life to the mission, vision, and strategy by providing a focus that lets each employee know how they contribute to the success of the company and its stakeholders' measurable expectations.

Integrated Measures (continued)

Integration makes it possible for performance measures to be effective agents for change. If the measures quantify results of an activity, one only need compare the measured data with the desired goals to know if actions are needed. In other words, the measures should carry the message.

Inappropriate measures are often the result of random selection methods. For example, brainstorming exercises can get people thinking about what is possible and provide long lists of what could be measured. Unfortunately, such efforts by themselves do not provide reliable lists of what should be measured. Unless the measures are firmly connected to results from a defined process, it is difficult to know what corrective actions to take as well as be able to predict with confidence what effects those changes will have.

In order to be able to identify effective corrective actions to improve products and services, results of all key processes must be measured. In this way, specific processes that need to change can be identified when progress is not satisfactory.

To this end, the training organization's goals and objective should clearly link to, and be derived from, the Headquarters or Field Organization's goals and objectives.

Terminology and Examples

There are many sources for information and descriptions for terms related to performance measurement. The following descriptions are consistent with DOE G 120.1-5, *Guidelines for Performance Management* and the *TRADE Performance-Based Management Handbook* (the examples were modified to be representative for training organizations):

Goal: A target level of performance expressed as a tangible, measurable act or action, against which actual achievement shall be compared, including a goal expressed as a quantitative standard, value, or rate. This is the result that a program or organization aims to accomplish.

Example: Provide the training courses and services required by organizational customers.

Terminology and Examples (continued)

Objective: A statement of desired result for an organization or activity to be achieved. A performance objective is an initial performance measurement concept that describes the desired outcome. To be able to measure performance, one must be able to express the outcome desired from an organization or activity.

Example: Identify training needs using a systematic needs assessment process.

Performance Measure: A quantitative or qualitative characterization of performance. Once a desired outcome is identified, a method must be established by which actual performance can be described, i.e., how performance can be determined. Measures of performance that may be quantitative (e.g., cost, timeliness, and productivity) or qualitative (e.g., flexibility, security, safety, and accuracy) are the most appropriate means. The method used must describe or characterize actual performance. Quantitative methods for characterizing performance will usually include a counting method and the units to be counted. Though qualitative characterizations may be required, use of quantitative characterizations are preferred.

Example: Prioritized individual, occupational, and organizational training needs.

Outcome: The expected, desired, or actual results to which outputs of activities of an agency have an intended effect. The term "outcome" is often used interchangeably with the term "expectation".

Example: An individual development plan (IDP) is complete for 100% of employees by 12/31/99.

Key Characteristics

According to *The Basics of Performance Measurement*, key characteristics of effective and manageable performance measures (and the related goals, objectives, and outcomes):

- Accurately measure key performance variables. A family of measures typically incorporates the following types of measures:
 - Productivity. A productivity measure answers questions such as, "How much?" or "How many?"

Key Characteristics (continued)

- Quality. This commonly includes both internal measurements like scrap, number of rejects, and defects per unit, as well as external customer satisfaction ratings or customer return frequencies.
- Timeliness. Basically, timeliness measures assess whether you're doing what you say you're going to do when you say you'll do it.
- Cycle time. A cycle time measurement measures how long something takes.
- Resource utilization. This is a measurement of resources used versus resources available for use.
- Safety. Safety measures are typically expressed in the number of accidents per so many hundreds or thousands of hours.
- Include a comparative basis to assist in better understanding displayed performance levels.
- Are collected and distributed on a timely basis.
- Are capable of being analyzed on both a macro- and microbasis. Frequently, both in-depth information about specific measures as well as bigger picture overviews are required.
- Cannot be easily manipulated to achieve desired results.
 Selecting measures that are true indicators of core performance will usually prevent such creative accounting systems.

Guidelines

The following guidelines may help in the design of a performance measurement system:

• Measurement drives behavior. This can be either good or bad. Make sure that what you measure will help achieve desired performance objectives. Developing inadequate measures that can be easily manipulated or that lead to unwanted performance outcomes, such as holding team meetings for no real purpose except that the number of team meetings help is being tracked, adds little value to any organization.

Guidelines (continued)

- Measure real work outputs and accomplishments. Also measure those in-process factors that affect work outputs and accomplishments. Always focus on bottom-line performance.
- Performance measurement systems cost money to develop and maintain. Focus on capturing these critical few measurements that will actually be used and are important. Create a relevant and organizationally-applicable family of measures and associated performance measurement hierarchies.
- To ensure usefulness and relevance, tie a specific performance measurement to a specific user by name or position.
- Develop measures and associated capture/delivery systems that provide adequate warnings of negative changes. To have relevance, such information must also have timeliness. A good performance measurement system provides the right kind of information to the right person at the right time and in the right format.
- Performance measurement displays should be easily and quickly understandable. Keep displays simple, specific, and relevant. Graphical formats are best.

Best Practices

Best practices for developing performance measures are to:

- Measure only what's really important, and using what's measured to help achieve desired performance levels.
- Relate the measure to a specific use for a real individual or group of individuals to help monitor, control, manage, track, diagnose, improve, or plan some aspect of their work better.
- Create a family of measures that will help the organization focus on what's important.
- Tailor performance measures to individual needs; what some call making performance measures SMART:
 - Specific
 - Measurable
 - Action-oriented
 - Relevant
 - Timely

(4) Federal Training Staff and Estimated Training Staff Travel Funds

The next two sections of the plan describe the resources available to implement the plan. Close integration of the identified training needs with budget and resource planning ensures that an accurate budget forecast is formulated to meet those needs. This will also improve the reliability of the data being tracked and will assist in evaluating return on investment.

4.1 Federal Training Staff

The Federal training staff should be listed by position titles and the number of full time equivalents (FTEs) in each position.

4.2 Estimated Training Staff Travel Funds

The estimated training staff travel funds should include a dollar amount to reflect the travel required by training staff to implement the plan. Estimates for airline tickets, per diem, rental car, and privately owned vehicle mileage should be included.

(5) Training Budget

The training budget must be included to reflect the monetary resources required to implement the plan.

Multi-year programs

The future resource estimates for multi-year programs must also be included.

(6) Major Training Delivery Programs, Projects, and Other Significant Activities

These training activities include:

- Operational requirements that were not identified as critical needs.
- Participation with DOE initiatives and directives.

The services provided by training organizations beyond course development and procurement should be included in this section. The drivers for these activities may include organizational operational requirements and DOE initiatives.

Examples

Examples of major training delivery programs, projects, and other significant activities include the following:

 A priority organizational operational requirement is to expand computer- and web-based training operations.

Examples (continued)

• DOE O 360.1A includes a chapter on Workforce Development Programs; the training organization will continue to assist with the implementation of the Succession Planning Program.

Recommended Enhancement

A recommended enhancement is to list the driver for each major training delivery program, project, and other significant activity.

(7) Schedules

The next component for a Training Plan is the schedule for completion of the following specific activities:

- Individual Development Plan
- Conduct of needs assessment
- Completion of Annual Training Summary Report

The schedule to initiate the review of the training plan is also required.

Recommendation

While the requirement is only for the scheduled dates, an internal management plan is recommended to plan and control the implementation of these activities to ensure completion on schedule.

(8) Mandatory Training

Mandatory training includes:

- Compliance training
- Directed training

Many training organizations do not have responsibility for developing, scheduling, or procuring courses for mandatory training requirements that affect only a small number of employees or a specific organizational unit. Often, these training requirements are tracked by the specific organizational unit rather than by the training organization.

The annual training plan should only include the mandatory training that is administered by the training organization.

8.1 Compliance Training

Compliance training is training required by statute, regulation, DOE directives, and contract management obligations.

Examples include:

- General Employee Training (GET), required for all employees by 10 CFR 835 and DOE O 440.1A.
- Classified Matter Protection and Control, required for employees who work with classified material by DOE O 471.2A.

8.2 Directed Training

Directed training is training required by Heads of elements (first-tier headquarters and senior Operations/Field Office officials).

An example includes:

- Security Immersion Training required for all employees by DOE Headquarters.
- The Acquisition Career Development Program, required for contracting and purchasing personnel by FAR 1.603-1, Office of Federal Procurement Policy 92-3, and Executive Order 12931.

Recommended Enhancement

A recommended enhancement is to include the driver for the mandatory training, as well as the scope of whom it affects, to support compliance tracking and prioritization.

(9) Manager, Supervisor, and Team Leader Training

This section of the Training Plan should indicate the types of leadership training and work assignments that provide development of leadership competencies.

9.1 Training in Leadership Competencies

Leadership Competencies include such things as strategic planning, policy development and agency representation, Federal and DOE budget processes, managing a diverse workforce, conflict management, and human resource management and development.

9.1 Training in Leadership Competencies (continued)

Examples include:

- Coach, Counsel, and Communicate
- Conflict Management
- Executive Forum on Diversity

9.2 Work Assignments

Work assignments that provide experience in leadership competencies must also be listed.

An example includes:

• A Project Manager in Environmental Restoration is scheduled for a 3-month detail to DOE Headquarters.

(10) DOE-Wide or Multi-Element Training

This component is required for each DOE element that provides DOE-wide or multi-element training.

This includes training that is delivered by the training organization for more than one element, typically either through partnership arrangements or Centers of Excellence.

Examples

Examples include:

- Albuquerque Operations Office, Qualification and Training Division, is a partner in the Federal Inter-Agency Training Council (FIATC). This partnership of state and local organizations administer courses such as:
 - Protecting Classified National Security Information
 - Model Work Environmental Presentation
 - Switch from the Civil Service Retirement System (CSRS) to the Federal Employee Retirement System (FERS)
 - Pre Retirement Training
- National Environmental Training Office (NETO) (DOE's
 Training Center of Excellence for Environmental Management)
 which provides courses across the system. They conduct an
 annual needs assessment to determine which courses to offer in
 the coming year. Representative examples of these courses

include:

Examples (continued)

- Management of PCBs for elements dealing with PCBs that are affected by the revised 40 CFR 761.
- For employees involved in environmental management projects:
 - Environmental Laws and Regulations
 - Principles of Environmental Restoration
- Oak Ridge Operations Office, Training and Development Group in conjunction with the Office of Chief Counsel, developed a web-based refresher course for ethics training. This course is now the DOE standard for ethics training and will be shared across the DOE system.
 - Standards in Ethical Conduct (Alice in Ethicsland)

(11) Developmental Training

This section is a recommended enhancement to list the planned developmental training identified through the needs assessment process. Examples include:

- Business Writing for Results
- Conflict Management
- Introduction to Excel

(12) Planned Reports

This section is a recommended enhancement to integrate the required planning and reporting processes. The Corporate Human Resource Information System (CHRIS) will contain much of the data required for these planned reports.

Annual Training Summary Report

DOE M 360.1A-1 mandates that each DOE element must, within three months of the close of the fiscal year, complete an annual training summary report on objectives, costs, and incidences of training that describes at least the following:

- (1) Accomplishments in relation to critical needs, goals, objectives, training outcome, and performance measures.
- (2) Training expenditures compared to number of Federal training staff, training staff travel funds, and program funds budgeted.

Annual Training Summary Report (continued)

- (3) Annual information as requested, for example:
 - a. number of employees in workforce
 - b. training office or organization staff cost
 - c. total expenditure for purchased training goods and services
 - d. total duty hours and non-duty hours in training
 - e. total duty hour and non-duty hour training incidences
 - f. cost of participant salaries while in training
 - g. training-related travel.
 - h. organizational, functional/occupational needs assessments completed and percent of employees with individual development plans.

Human Resource Management Accountability Program (HRMAP) The HRMAP is a tool used in assessing Departmental as well as the individual programs, on an annual basis. An established set of "core metrics" is used to ensure alignment with the Department's Strategic Plan.

Federal Equal
Opportunity Recruitment
(FEORP) and Disabled
Veterans Affirmative
Action Program
(DVAAP) Plan
Certification and
Accomplishment Report

DOE is required to submit annual plan certifications and accomplishment reports on recruitment, hiring and training of minorities, women, and disabled veterans to the Office of Personnel Management (OPM).

(13) References

This section is a recommended enhancement to streamline the listing of references and drivers.

Appendix A

Example Needs Assessment Plan Outline

Example Needs Assessment Plan Outline

Scope of Assessment (individual, occupational, organizational, or customer satisfaction)

Process for conducting the assessment

- Level of rigor or formality
- Tools and techniques

Data Collection Questions

Schedule

Roles and responsibilities

Evaluation strategy

Appendix B

Related Uses for the Assessment Data

Related Uses for the Assessment Data

There are numerous uses for the assessment data beyond identifying the products and services a training organization must provide based on the identified operational requirements (individual needs for training and development, customer expectations, regulatory requirements, DOE initiatives, etc.).

<u>Individual level</u>

- ♦ Determining newly emerging skills needs
- Determining what skills needs are predominant within the organization
- ♦ Planning "corporate" courses that address similar needs

Occupational/functional Level

- Evaluating training and other departmental programs to meet knowledge and skill needs of employees in key occupations; i.e., generic development plans, core training requirements, qualification and certification requirements.
- Evaluating workforce trends and occupational forecasts to determine short- and long-term strategies to be undertaken in attaining the targeted skill requirements.
- Developing strategies to address recruiting and retention issues for mission critical occupations.
- ♦ Identifying and tracking career paths.
- Ensuring availability of budgets and program resources for mission critical positions.
- Comparing occupations and functional work assignments against compliance mandates to determine the specific training to be given.

Organizational Level

- Providing information into the development of the Training Plan
- ♦ Identifying corporate training needs.
- Establishing training goals, priorities, and plans.
- Integrating training plans with work planning, budgeting, and other personnel management systems.
- ♦ Making short and long-term decisions on investment of resources to plan for training or other developmental activities.
- ♦ Maintaining a diversified workforce in which women, minorities, and persons with physical challenges are appropriately represented and developed in the organization.
- Creating programs to support unique developmental needs of a target population, e.g. a career development or a middle management development program.

Appendix C

Example Training Plan

Example Training Plan

NOTES: All data is representative, not actual.

The sequence for this example is in accordance with DOE O 360.1.

(Recommended Enhancements)

- Introduction
 - Background (description of functions and customers)
 - Vision Statement
 - Mission Statement
 - Operating philosophy
 - Major functions/responsibility areas
- 1 Critical element needs (or those immediate training needs which, when met, will be effective in improving organizational and workforce performance).

(Recommended enhancements). Short discussion of the process used to identify the list of critical element needs.

Critical Need	Training
Project Management. Skill enhancement for managers has been identified as a high priority need throughout DOE and at (element).	Managing Projects in Organizations
	Performance Based Management Contracting
	Management Development Seminar
	Best Practices in DOE Project Management
Safeguards and Security. Reinforcement and emphasis of safeguards and security operations at (element).	Safeguards and Security
Nuclear Criticality Safety. 10 individuals scheduled to complete their qualification requirements by May 31, 2000 require training.	Nuclear Criticality Safety
Contracting. The change from management and	Contracting Acquisition
operating contracts to integrated contracts requires training for effective contractual oversight.	Performance Based Contracting

2 Training Goals and Objectives and

3 Performance Measures and Outcomes

Goal 1: Provide the training courses and services required by organizational customers.

Objective 1.1: Identify training needs using a formal needs assessment process.

Performance Measure: Prioritized individual, occupational, and organizational training needs.

Outcomes:

1.1.1 An individual development plan (IDP) is complete for 100% of employees by (date).

- 1.1.2 The training needs listed in the IDP are compiled and prioritized.
- 1.1.3 Occupational needs assessment is complete by (date).
- 1.1.4 Organization needs assessment is complete by (date).
- 1.1.5 Critical training needs are validated.

Objective 1.2: Provide training identified as critical and priority needs.

Performance Measure: Training has been offered that was identified as necessary for employees to perform their job responsibilities.

Outcomes:

- 1.2.1 Training for critical needs is scheduled and offered by (date).
- 1.2.2 Training for priority needs is scheduled and offered by (date).
- 1.2.3 A formal process for vendor selection, which analyzes cost and services of various vendors, is used.

Objective 1.3: Provide continuous improvement of training services.

Performance Measure: Training services are efficient and effective.

Outcomes:

- 1.3.1 Methodologies for training delivery are selected based upon the needs of the target audience and the instructional content of the course.
- 1.3.2 Level 1 (student satisfaction) evaluations are performed on all courses.
- 1.3.3 Level 1 (student satisfaction) evaluations result in an overall satisfaction rating of 3.5 (or higher) on a 5-point scale.
- 1.3.4 Level 2 (student learning) evaluations are performed on technical and knowledge-based courses.
- 1.3.5 Line managers are contacted and requested to provide feedback on course effectiveness and efficiency.
- 1.3.6 The overall rating for customer satisfaction is 3.5 (or higher) on a 5-point scale.
- 1.3.7 Corrective actions are performed for course and service improvement.

Goal 2: Maintain necessary organizational infrastructure.

Objective 2.1: Maintain training records.

Performance Measure: Provide training records that are complete, auditable, and meet records management requirements.

Outcomes:

- 2.1.1 Employee (student) training records include the training history, 3410 forms, grades, and certificates.
- 2.1.2 Course files include the class roster and student evaluations.
- 2.1.3 Training records meet the records management requirements.

Objective 2.2: Produce required plans and reports.

Performance Measure: Comply with the requirements in DOE O 360.1.

Outcomes:

2.2.1 The Annual Training Plan is complete by (date).

2.2.2 The Annual Training Summary Report is complete by (date).

Objective 2.3: (Element) organizationally supports training.

Performance Measure: Resources are sufficient to meet identified training needs.

Outcomes:

- 2.3.1 Funding is adequate to procure or develop needed training activities.
- 2.3.2 Staffing is adequate to perform training services.
- 2.3.3 Responsibilities of the manager, supervisors, employees, Federal Technical Capability Panel, and training staff are clearly defined, and performed, as related to employee training and development.

4 Federal training staff and estimated training staff travel funds

- 4.1 Federal training staff:
 - Director 1.0 Full-time equivalent (FTE)
 - Administrator for Federal training 1.0 FTE
 - Administrator for contractor training oversight 1.0 FTE
 - Administrator for contracts and program administration 1.0 FTE
- 4.2 Estimated training staff travel funds: \$xxxxxxx.

5 Training budget (including future resource estimate for multi-year programs)

(Recommended enhancement – add data from previous year)

- 5.1 Training budget: \$xxxxxxx
- 5.2 Future resource estimate (for multi-year programs): \$xxxxxxx

6 Major training delivery programs, projects, and other significant activities

(Recommended enhancement – add the driver for each activity)

Driver	Activity	
Operational Requirements:	Issue guidance for contractor Annual Training Plans and approve. Conduct quarterly assessments of contractor training and development programs and	
Contractor Oversight	agreed upon performance measurements.	
Operational Requirements: Federal Training	 Expand computer- and web-based training operations. Provide courses for personal growth and professional development as funding allows 	
Operational Requirements: Infrastructure	Maintain web page.Operate Center of Excellence.	

Driver	Activity
DOE O 360.1: Workforce Development Programs DOE P 426.1 DOE G 426.1-1	 Continue implementation of the Succession Planning Program, as appropriate. Continue implementation of the Career Development Program. Continue the implementation of the HRD Career Counseling Program. Continue the implementation of the Mentoring Program.
DOE O 360.1: Corporate Human Resources Information System (CHRIS)	Implement the Corporate Human Resources Information System (CHRIS), Training Administration function.
DOE O 360.1: Technical Qualification Program DOE-STD-1063- 97	 Develop a formalized Technical Qualification Program (TQP) Plan. Develop site-specific qualification standards in support of the Technical Qualification Program. Develop written testing instruments and oral board questions for the Facility Representative Qualification Standard for the U1A and the Hazardous Waste Site facilities.
DOE Corporate Education, Training, and Development Business Plan	Develop guidance for completing the Needs Assessment and Training Plans to support Performance Expectation 1-1.
Human Resource Management Accountability Program (HRMAP)	Track and report core metrics and site supervisory training programs and Workforce 21 issues

7 Schedules

- 7.1 Schedule for Individual Development Plans (IDPs): Complete by 12/31/1999
- 7.2 Schedule for conduct of needs assessment(s): Complete by 2/29/2000
- 7.3 Schedule for completion of annual training summary report: Complete by 12/31/1999
- 7.4 Schedule for initiation of review of training plan: Begin by 6/1/2000

8 Mandatory Training

(Recommended enhancement: Include the requirement driver and scope.)

8.1 Compliance Training (Training required by statute, regulation, DOE directives, and contract management obligations.)

Driver	Scope	Training
DOE O 471.2A	Employees who work with classified material	Classified Matter Protection and Control
DOE O 311.1A	All employees	EEO/Diversity
		Prevention of Sexual Harassment
5 CFR 3301	Identified employees	Ethics
10 CFR 835	Employees requiring	General Employee Training
DOE O 440.1A	access to specific sites	
29 CFR 1910.120	Employees requiring access to secure sites	HAZWOPER
10 CFR 835	Employees requiring access to secure sites	Rad Worker I
10 CFR 835	Employees requiring access to secure sites	Rad Worker II
DOE O 470.1	Employees with a security clearance; annually	Safeguards and Security Refresher

8.2 Directed Training (Training required by Heads of elements (first-tier headquarters and senior Operations/Field Office officials.)

Driver	Scope	Training
DOE Headquarters	All employees	Security Immersion Training
Agency Heads	Contracting &	Acquisition Career Development Program:
	purchasing personnel	Level I Core Courses:
	 	 Fundamentals of Procurement
		Contract Pricing
		Level II Core Courses:
	Government Contract Law	
	Intermediate Contracting	
	Intermediate Contract Pricing	
	Level II Core Courses:	
		Executive Contracting
		Management for Contracting Supervisors
Manager	New employees	Orientation for New Employees

9 Manager, Supervisor, and Team Leader Training

- 9.1 Training in Leadership Competencies, such as strategic planning, policy development and agency representation, Federal and DOE budget processes, managing a diverse workforce, conflict management, and human resource management and development.
 - Coach, Counsel, and Communicate
 - Conflict Management
 - Executive Forum on Diversity
 - OPM Management Development Center Seminars
 - Prompt Payment Act
- 9.2 Work Assignments that provide experience in leadership competencies.
 - Project Manager in Environmental Restoration will be on a 3-month detail to DOE Headquarters.
- **DOE-wide or multi-element training.** (This component is required for each DOE element that provides DOE-wide or multi-element training.)

(Recommended enhancement – scope)

Scope	Training
Elements dealing with PCBs affected by the revised 40 CFR 761	Management of PCBs
Employees involved in environmental management projects	Environmental Laws and Regulations
	Managing Human Health & Ecological Risk Assessment via CERCLA/RCRA
	Principles of Environmental Restoration
Identified employees	Standards in Ethical Conduct (Alice in Ethicsland)

11 Developmental Training (Recommended enhancement)

Planned development training includes:

- Assertiveness Skills for Technical and Support Personnel
- Business Writing for Results
- Conflict Management
- Effective Listening and Memory Development
- Interpersonal Skills
- Introduction to Excel
- Leadership Development Program
- Management Development Seminar

12 Annual Training Summary Report (Recommended enhancement)

The FY2000 Annual Training Summary Report will include a summary of the following data:

- (1) Accomplishments in relation to critical needs, goals, objectives, training outcome, and performance measures.
- (2) Training expenditures compared to number of Federal training staff, training staff travel funds, and program funds budgeted.
- (3) Annual information as requested, for example:
 - (a) number of employees in workforce
 - (b) training office or organization staff cost
 - (c) total expenditure for purchased training goods and services
 - (d) total duty hours and non-duty hours in training
 - (e) total duty hour and non-duty hour training incidences
 - (f) cost of participant salaries while in training
 - (g) training-related travel.
 - (h) organizational, functional/occupational needs assessments completed and percent of employees with individual development plans.

13 References (Recommended Enhancement)

- CFR 3301, Supplemental Standards of Ethical Conduct For Employees of the Department of Energy
- CFR 835, Occupational Radiation Protection
- 29 CFR 1910.120, Occupational Safety And Health Standards, "Hazardous waste operations and emergency response"
- DOE O 311.1A, Equal Employment Opportunity and Diversity Program
- DOE O 360.1, Training
- DOE G 426.1-1, Recruiting, Hiring, and Retaining High-Quality Technical Staff -- A Manager's Guide to Administrative Flexibilities
- DOE P 426.1, Federal Technical Capability Policy for Defense Nuclear Facilities
- DOE O 440.1A, Worker Protection Management for DOE Federal and Contractor Employees
- DOE O 470.1, Safeguards and Security Program
- DOE O 471.2A, Information Security Program
- DOE-STD-1063-97, Establishing and Maintaining a Facility Representative Program at DOE Facilities

Appendix D

References

References

References related to Individual Development Plans includes:

- Headquarters Individual Development Planning Guide
- Field Individual Development Planning Guide

References that includes needs assessments includes:

- DOE-HDBK-1074-95, Alternative Systematic Approaches to Training
- DOE-HDBK-1103-96, Table-Top Needs Analysis
- DOE-STD-1077-94, Training Accreditation Program Standard: Requirements and Guidelines
- DOE-HDBK-1078-94, Training Program handbook: A Systematic Approach to Training
- *DOE Succession Planning Handbook*, June 21 1999 at http://www.hr.doe.gov/pers/splan/success.html
- DOE Albuquerque Operations Office, Qualifications and Training Division, *Training Needs Assessment Guide*
- DOE Nevada Operations Office, Human Resource Division Training and Development Program Office, *Training Requirements Guideline*, July 1997
- DOE Oak Ridge Operations Office, Training and Development Group, *Customer Satisfaction Survey*, 1997

References that relate to performance measures include:

- Brown, M. G. (1996). <u>Keeping Score</u>: <u>Using the Right Metrics to Drive World-Class Performance</u>. New York: Quality Resources.
- DOE G 120.1-5, Guidelines for Performance Measurement
- Harbour, J. L. (1997). <u>The Basics of Performance Measurement.</u> New York: Quality Resources.
- Training Resources and Data Exchange (TRADE), A Performance-Based Management Handbook